WHAT IS CLAIMED IS:

1. A method of fueling a gas turbine with methane gas from natural gas reserves having from about 40 to about 80 volume percent methane, the method comprising:

providing a first natural gas stream from the natural gas reserve;

separating inert gases from methane gas in the first natural gas stream to provide a separated methane gas and a separated inert gas;

blending the separated inert gas with a second natural gas stream having from about 40 to about 80 volume percent methane wherein after blending the amount of inert gas in the second natural gas stream will increase the output of a gas turbine by at least about 5 percent as compared to a turbine fueled with pipeline quality natural gas.

2. A method as recited in claim 1 wherein the inert gas includes nitrogen gas and the nitrogen gas is separated from the methane gas in the first natural gas stream with a membrane.

3. A method as recited in claim 1 wherein the inert gas includes carbon dioxide gas and the carbon dioxide gas is cryogenically separated from the methane gas in the first natural gas stream.

4. A method as recited in claim 3 wherein the cryogenic separation is done with a natural gas reserve with a high pressure feed having a pressure greater than about 2500 psig and the high pressure feed is expanded to a lower pressure which is effective to separate the carbon dioxide gas and the methane gas in the first natural gas stream.

5. A method as recited in claim 3 wherein the cryogenic separation is done with a natural gas reserve with a low pressure feed having a pressure lower than about 1100 psig and the low pressure feed is cooled with a refrigeration unit to a temperature which

effective to separate the carbon dioxide gas and the methane gas in the first natural

gas stream.

6. A method as recited in claims 1, 2, 3, 4 or 5 wherein the separated methane from the first natural gas stream is processed into pipeline quality natural gas.

7. A method of fueling a gas turbine with methane gas from natural gas reserves having from about 40 to about 80 volume percent methane, the method comprising;

providing a first natural gas stream from the natural gas reserve;

separating inert gases from methane gas in the first natural gas stream to provide a separated methane gas and a separated inert gas;

blending the separated inert gas, hydrogen, and a second natural gas stream having from about 40 to about 80 volume percent methane to provide a hydrogen enhanced inert gas/methane gas/hydrogen gas blend wherein the amount of inert gas blended with the second natural gas stream will decrease the relative percentage of methane gas to below about 40 volume percent methane, based upon the volumes of inert and methane gases, they hydrogen gas being in an amount effective for providing flame stability for the hydrogen enhanced inert gas/methane gas/hydrogen gas blend; and

fueling a gas turbine with the hydrogen enhanced inert gas/methane gas/hydrogen gas blend.

8. The method for fueling a gas turbine as recited in claim 7 wherein the hydrogen enhanced inert gas/methane gas/hydrogen gas blend comprises at least about 6 volume percent hydrogen gas.

9. The method for fueling a gas turbine as recited in claim 7 wherein the method further includes dehydrating the natural gas or hydrogen enhanced inert gas/methane gas/hydrogen gas blend, the dehydration effective for providing the hydrogen enhanced inert gas/methane gas/hydrogen gas blend with at least about 110 BTUs per standard cubic foot of gas.

10. The method for fueling gas turbine as recited in claims 7 or 9 wherein the separated inert gas has less than about 35 volume percent methane, based on the volumes of methane and inert gases and the hydrogen enhanced inert gas/methane gas/hydrogen gas blend has from about 6 to about 10 volume percent hydrogen gas.

11. The method for fueling gas turbine as recited in claims 7 or 9 wherein the separated inert gas blend has less than about 20 volume percent methane, based on the volumes of methane and inert gases and the hydrogen enhanced inert gas/methane gas/hydrogen gas blend has from about 6 to about 10 volume percent hydrogen gas.

12. A method of fueling a gas turbine with methane gas from natural gas reserves having from about 40 to about 80 volume percent methane, the method comprising;

providing a first natural gas stream from the natural gas reserve;

separating inert gases from methane gas in the first natural gas stream to provide a separated methane gas and a separated inert gas;

blending the separated inert gas and a second natural gas stream having from about 40 to about 80 volume percent methane to provide an enhanced inert gas/methane gas blend wherein the amount of inert gas blended with the second natural gas stream will decrease the relative percentage of methane gas to below about 40 volume percent methane, based upon the volumes of inert and methane gases;

removing at least one acid component from the inert enhanced inert gas/methane gas blend to provide a sweet inert enhanced inert gas/methane gas blend or removing at least one acid component from the first natural gas stream so as to provide a sweet inert enhanced inert gas/methane gas blend;

mixing the sweet inert enhanced inert gas/methane gas blend and water to provide a hydrated sweet inert enhanced inert gas/methane gas blend, the water in the hydrated sweet inert enhanced inert gas/methane gas blend being in amount effective for permitting the conversion of a portion of the methane in the sweet inert enhanced inert gas/methane gas blend to hydrogen gas and effective for providing a flame stable dehydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend;

catalytically converting a portion of the methane to hydrogen gas in the hydrated sweet inert enhanced inert gas/methane gas blend to provide a hydrogen enhanced inert gas/methane gas/hydrogen gas blend, the conversion effective for providing the flame stable dehydrated natural gas;

dehydrating hydrogen enhanced inert gas/methane gas/hydrogen gas blend to provide the flame stable dehydrated hydrogen enhanced natural gas; and

fueling a gas turbine with the dehydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend.

13. The method for fueling a gas turbine as recited in claim 12 wherein removing the acid component from the first natural gas stream or the inert enhance inert gas/methane gas blend includes removing hydrogen sulfide from the natural gas.

14. The method for fueling a gas turbine as recited in claim 12 wherein the hydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend is dehydrated in an amount effective for providing the dehydrated hydrogen enhanced natural gas with at least about 110 BTUs per standard cubic foot of gas.

15. The method for fueling a gas turbine as recited in claim 13 wherein the hydrogen sulfide is removed from the first natural gas stream or the inert enhanced inert gas/methane gas blend with a physical solvent while minimizing removal of any inert gas.

16. The method for fueling a gas turbine as recited in claim 15 wherein the physical solvent is selected from the group consisting of methanol, a blend of dimethyl ethers of polyethylene glycol, propylene carbonate, N-methyl-2-pryrrolidone, a blend of oligoethlene glycol methyl isopropyl ethers, tri-n-butyl phosphonate, methyl cyano-acetate and mixtures thereof.

17. The method for fueling a gas turbine as recited in claim 12 wherein the dehydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend comprises at

least 6 volume percent hydrogen gas.

18. The method for fueling a gas turbine as recited in claim 12 wherein the methane in the hydrated sweet inert enhanced inert gas/methane gas blend is catalytically converted using a shift catalyst selected from the group consisting of iron/chrome/copper, copper/zinc/aluminum and mixtures thereof.

19. The method as recited in claims 12 or 14 wherein the inert enhanced inert gas/methane gas blend does not have more than about 35 volume percent methane and the dehydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend comprises from about 6 to about 10 volume percent hydrogen gas.

20. The method as recited in claims 12 or 14 wherein the inert enhanced inert gas/methane gas blend does not have more than about 20 volume percent methane and the dehydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend comprises from about 6 to about 10 volume percent hydrogen gas.

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21. A method of fueling a gas turbine with methane gas from natural gas reserves having from about 40 to about 80 volume percent methane, the method comprising;

providing a first natural gas stream from the natural gas reserve;

separating inert gases from methane gas in the first natural gas stream to provide a separated methane gas and a separated inert gas;

blending the separated inert gas, water and a second natural gas stream having from about 40 to about 80 volume percent methane to provide a sour inert enhanced inert gas/methane gas/water blend wherein the amount of inert gas blended with the second natural gas stream will decrease the relative percentage of methane gas to below about 40 volume percent methane, based upon the volumes of inert and methane gases, the water in the sour inert enhanced inert gas/methane gas/water blend being in amount effective for permitting the conversion of a portion of the methane in the sour inert enhanced inert gas/methane gas/water blend to hydrogen gas to provide a

hydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend and effective for providing a flame stable dehydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend;

catalytically converting a portion of the methane to hydrogen gas in the sour inert enhanced inert gas/methane gas/water blend to provide a hydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend, the conversion effective for providing the flame stable dehydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend;

dehydrating hydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend to provide the flame stable dehydrated inert enhanced inert gas/methane gas/hydrogen gas blend; and

fueling a gas turbine with the flame stable dehydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend.

22. The method for fueling a gas turbine as recited in claim 21 wherein the hydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend is dehydrated in an amount effective for providing the dehydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend with at least about 110 BTUs per standard cubic foot of gas.

23. The method for fueling a gas turbine as recited in claim 21 wherein the dehydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend comprises at least 6 volume percent hydrogen gas.

24. The method for fueling a gas turbine as recited in claim 21 wherein the methane in the sour inert enhanced inert gas/methane gas/water blend is catalytically converted using a chrome/molybdenum catalyst.

25. The method as recited in claims 21 or 22 wherein the sour inert enhanced inert gas/methane gas/water blend does not have more than about 35 volume percent methane gas, based upon the volumes of methane and inert gases, and the flame stable

dehydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend comprises from about 6 to about 10 volume percent hydrogen gas.

26. The method as recited in claims 21 or 22 wherein the sour inert enhanced inert gas/methane gas/water blend does not have more than about 20 volume percent methane gas, based upon the volumes of methane and inert gases, and the flame stable dehydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend comprises from about 6 to about 10 volume percent hydrogen gas.

27. A method of fueling a gas turbine with methane gas from natural gas reserves having from about 40 to about 80 volume percent methane, the method comprising:

providing a natural gas stream from the natural gas reserve;

separating inert gases from methane gas in the natural gas stream to provide a separated methane gas and a separated inert gas/methane gas blend wherein the separation is made such than when the inert gas methane gas blend is used as turbine fuel there is an amount of inert gases in the blend which is effective for permitting the blend to increase an output of the gas turbine by at least about 5 percent as compared to a turbine fueled with pipeline quality natural gas.

28. A method of fueling a gas turbine with methane gas from natural gas reserves having from about 40 to about 80 volume percent methane, the method comprising;

providing a first natural gas stream from the natural gas reserve;

separating inert gases from methane gas in the first natural gas stream to provide a separated methane gas and a separated inert gas/methane gas blend having less than 40 volume percent methane;

blending the separated inert gas/methane gas blend and hydrogen to provide a hydrogen enhanced inert gas/methane gas/hydrogen gas blend, the hydrogen gas being in an amount effective for providing flame stability for the hydrogen enhanced inert gas/methane gas/hydrogen gas blend; and

fueling a gas turbine with the hydrogen enhanced inert gas/methane gas/hydrogen gas blend.

29. The method for fueling gas turbine as recited in claim 28 wherein the separated inert gas/methane gas blend has less than about 35 volume percent methane, based on the volumes of methane and inert gases and the hydrogen enhanced inert gas/methane gas/hydrogen gas blend has from about 6 to about 10 volume percent hydrogen gas.

30. The method for fueling gas turbine as recited in claim 28 wherein the separated inert gas/methane gas blend has less than about 20 volume percent methane, based on the volumes of methane and inert gases and the hydrogen enhanced inert gas/methane gas/hydrogen gas blend has from about 6 to about 10 volume percent hydrogen gas.

31. A method of fueling a gas turbine with methane gas from natural gas reserves having from about 40 to about 80 volume percent methane, the method comprising;

providing a first natural gas stream from the natural gas reserve;

separating inert gases from methane gas in the first natural gas stream to provide a separated methane gas and a separated inert gas/methane gas blend having less than about 40 volume percent methane;

removing at least one acid component from the separated inert gas/methane gas blend to provide a sweet inert enhanced inert gas/methane gas blend;

mixing the sweet inert enhanced inert gas/methane gas blend and water to provide a hydrated sweet inert enhanced inert gas/methane gas blend, the water in the hydrated sweet inert enhanced inert gas/methane gas blend being in an amount effective for permitting the conversion of a portion of the methane in the sweet inert enhanced inert gas/methane gas blend to hydrogen gas and effective for providing a flame stable dehydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend.

Catalytically converting a portion of the methane to hydrogen gas in the

hydrated sweet inert enhanced inert gas/methane gas blend to provide a hydrogen enhanced inert gas/methane gas/hydrogen gas blend, the conversion effective for providing the flame stable dehydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend;

dehydrating hydrogen enhanced inert gas/methane gas/hydrogen gas blend to provide flame stable dehydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend; and

fueling a gas turbine with the dehydrated flame stable dehydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend.

32. The method for fueling a gas turbine as recited in claim 31 wherein the methane in the hydrated sweet inert enhanced inert gas/methane gas blend is catalytically converted using a shift catalyst selected from the group consisting of iron/chrome/copper, copper/zinc/aluminum and mixtures thereof.

33. The method as recited in claim 32 wherein the sweet inert enhanced inert gas/methane gas blend does not have more than about 35 volume percent methane and the dehydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend comprises from about 6 to about 10 volume percent hydrogen gas.

34. The method as recited in claim 32 wherein the sweet inert enhanced inert gas/methane gas blend does not have more than about 35 volume percent methane and the dehydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend comprises from about 6 to about 10 volume percent hydrogen gas.

35. A method of fueling a gas turbine with methane gas from natural gas reserves having from about 40 to about 80 volume percent methane, the method comprising;

providing a first natural gas stream from the natural gas reserve;

providing a first natural gas stream from the natural gas reserve;

separating inert gases from methane gas in the first natural gas stream to

provide a separated methane gas and a separated inert enhanced inert gas/methane gas blend having less than about 40 volume percent methane;

mixing the separated inert enhanced inert gas/methane gas blend and water to provide a hydrated inert enhance inert gas/methane gas blend, the water in the hydrated sweet inert enhanced inert gas/methane gas blend being in an amount effective for permitting the conversion of a portion of the methane in the inert enhance inert gas/methane gas blend to hydrogen gas and effective for providing a flame stable dehydrated hydrogen enhanced inert gas/methane gas hydrogen gas blend;

Catalytically converting a portion of the methane to hydrogen in the inert enhanced inert gas/methane gas/water blend to provide a hydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend, the conversion effective for providing the flame stable dehydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend;

dehydrating hydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend to provide flame stable dehydrated inert enhanced inert gas/methane gas/hydrogen gas blend; and

fueling a gas turbine with the flame stable dehydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend.

36. The method for fueling a gas turbine as recited in claim 35 wherein the methane in the inert enhanced inert gas/methane gas/water blend is catalytically converted using a chrome/molybdenum catalyst.

37. The method as recited in claim 36 wherein the inert enhanced inert gas/methane gas blend does not have more than about 35 volume percent methane and the dehydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend comprises from about 6 to about 10 volume percent hydrogen gas.

38. The method as recited in claim 36 wherein the inert enhanced inert gas/methane gas blend does not have more than about 35 volume percent methane and the dehydrated hydrogen enhanced inert gas/methane gas/hydrogen gas blend comprises from about 6 to about 10 volume percent hydrogen gas.